

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
30 May 2003 (30.05.2003)

PCT

(10) International Publication Number
WO 03/044682 A1

(51) International Patent Classification⁷: **G06F 15/02**

(21) International Application Number: **PCT/KR02/00535**

(22) International Filing Date: **27 March 2002 (27.03.2002)**

(25) Filing Language: **English**

(26) Publication Language: **English**

(30) Priority Data:
2001/36250 U 23 November 2001 (23.11.2001) KR

(71) Applicant and

(72) Inventor: **PARK, Jeong-Hoon [KR/KR]; #304-102 Gun-
young villa, Bamgasi-village, Ilsan4-dong, Koyang-city,
Kyunggi-do, 411-759 (KR).**

(74) Agent: **LEE, Jong Il; #904, BYC Building, 648-1 Yeok-
sam-dong, Kangnam-ku, Seoul 130-080 (KR).**

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

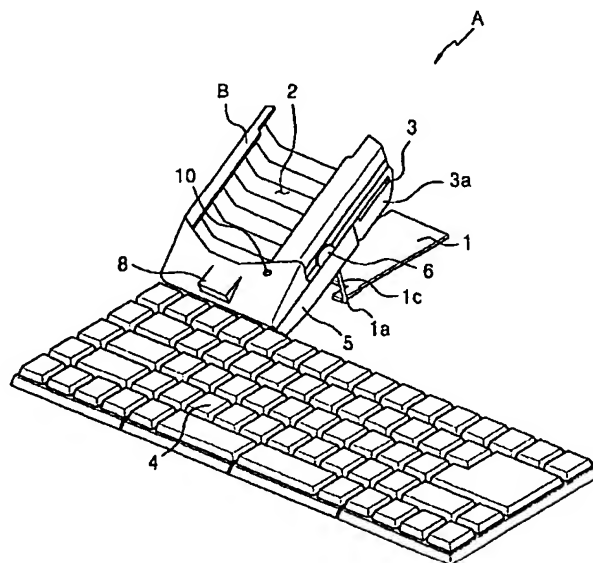
(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **A PORTABLE TERMINAL CASE**



(57) Abstract: The present invention relates to a case for a portable terminal such as a personal digital assistant (PDA) or a portable computer. In more detail, it relates to a case that is internally equipped with a keyboard and an extension package such as an extended memory and an auxiliary battery so that users do not need to carry extra external devices. Inputting words is generally operated by touch-screen method on a portable terminal, however, in case of an inexperienced user and/or a user having a large amount of data to be inputted, it is very inconvenient to input characters by touch-screen method on a small screen.

WO 03/044682 A1

A PORTABLE TERMINAL CASE

[Technical Field of the Invention]

5 The present invention relates to a case for a portable terminal such as a personal digital assistant(PDA) or a portable computer. In more detail, it relates to a case that is internally equipped with a keyboard and an extension package, consists of two
10 extended memories and an auxiliary battery, so that users do not need to carry extra external devices.

[Description of the Prior Art]

15 Most people, using a portable terminal such as a PDA or a portable computer, generally use some limited functions such as a simple memorandum function and/or an address book function.

20 However, as the computer technology is being developed, it is expected that an easy-portable terminal capable of performing the same functions as a desktop computer will replace a notebook computer.

25 At present, the notebook computer is smaller than the desktop computer but still not so convenient to be carried with, and on the other hand, the portable

terminal is easy to be carried with but unable to provide the functions of notebook computer.

For example, inputting words is generally operated by touch-screen method on portable terminals, however, in
5 case of an inexperienced user and/or a user having a large amount of data to be inputted, it is very inconvenient to input words by touch-screen method on a small screen.

In order to solve the problem with maintaining easy
10 portability, various types of keyboards such as a thumb-input type keyboard, a mini-keyboard, and a roll-type keyboard have been developed, however, they are not convenient enough to satisfy inexperienced users.

15 In addition, a portable terminal has a lot of difficulties that the memory is insufficient and the using duration is short for the case of using a multimedia and/or numbers of application programs.

In other words, in case of using a multimedia program
20 on a portable terminal, the storage capacity of the memory is only about 6~7 songs and the possible continuous using duration of the battery is only about 2~3 hours. Thus, most users must purchase an extension package of an extended memory, an auxiliary battery,
25 and/or a communication card so that it is very

inconvenient as well as economically ineffective. In addition, most users also purchase an extra keyboard and carry it with the terminal.

5 There is another problem that the front liquid crystal screen, a display device of a portable terminal, is exposed to the exterior with no cover so that it can be easily damaged by an external impact.

[Description of the Invention]

10

The present invention is proposed to solve the problems of the prior art mentioned above. It is therefore the object of the present invention to provide a portable terminal case that is internally
15 equipped with an extended memory, a remote communication device, and other various auxiliary devices to provide an portability and usability for users.

It is another object of the invention to provide the
20 portable terminal case by which a portable terminal can be easily connected to a keyboard and the front liquid crystal screen of the terminal can be protected from the external impact.

To achieve the object mentioned above, the invention
25 presents a portable terminal case comprising:

a main body of which a placing room for portable terminals being placed therein is formed on the front upper side;

5 a keyboard, equipped with numbers of keys, that can be divided into several sectors by at least one or more inside-empty hinges;

a horizontal hinge rotationably connecting the keyboard to the main body to locate the keyboard at a room formed at the lower deck of the back side of the main body; and

a cover holder that is rotationably fixed at the back of the main body around a rotation shaft to support the main body.

15 [Brief Description of the Drawings]

FIG. 1 is a perspective view illustrating an embodiment of the portable terminal case in accordance with the present invention.

20 FIG. 2 is a side view illustrating an occasion of using a portable terminal placed in the case described in FIG. 1 on the hand.

FIG. 3 is a side view illustrating an occasion of using a portable terminal placed in the case described in FIG. 1 on the floor.

FIG. 4 is a side view illustrating an occasion of using the keyboard with a portable terminal being placed in the case described in FIG. 1 on the floor.

FIGs. 5a ~ 5c are a top view, a bottom view, and a side view of the portable terminal case in accordance with the present invention respectively.

FIG. 6 is a view illustrating the state of circuit connection around an inside-empty hinge of the keyboard described in FIG. 1.

FIG. 7 is a front view of a case with the keyboard cover being open.

FIG. 8 is a conceptual view illustrating the overall circuit of the portable terminal case in accordance with the present invention.

15

[Detailed Description of the Embodiments]

Hereinafter, referring to appended drawings, the structures and the operation procedures of the embodiments of the present invention are described in detail.

20

FIG. 1 is a perspective view illustrating an embodiment of the portable terminal case in accordance with the invention.

As described in FIG. 1, a placing room(2) is formed

25

at the front side of the main body(B) of the case(A) for a portable terminal such as a personal digital assistant(PDA), a portable computer, or a personal communications services(PCS) being placed therein.

5 Here, the connection slot(8) formed on the main body(B) under the placing room(2) and the slot of the portable terminal are connected to each other, and thereby data can be transferred between the portable terminal and an extension package(3) of the case(A).

10 The extension package(3) such as an extended memory, a communication card, or a slot for other auxiliary device installed at the upper deck of the back side of the main body(B), and an auxiliary battery(3a) is installed, next to the extension package(3), at the
15 back side of the main body(B) to support the extension package(3) and provide an auxiliary power to the terminal.

Here, if manufacturing a case of which two extension packages(3) can be installed simultaneously at both
20 sides, a more convenient terminal case can be obtained.

A foldable keyboard(4) equipped with numbers of keys is electrically connected to the main body(B). While the keyboard(4) is not being in use, it is pulled back, with being folded, to be placed in a room formed at
25 the lower deck of the back side of the main body(B)

and protected by a keyboard cover(5).

Here, the keyboard(4) has the same size as that of the standard keyboard used in the conventional computer.

5 The keyboard cover(5) rotates around the vertical hinge(5a), and it is locked or released by a keyboard cover lock(6) formed at the opposite side of the back of the main body(B) to the side where the vertical hinge(5a) is installed.

10 In case of placing a portable terminal in the case(A), the cover(1), which protects the liquid crystal screen of the portable terminal, can be pulled over at the cover holder(1c), and the cover holder(1c), which supports the main body(B), can be also pulled over at
15 the back of the main body(B).

Therefore, only the cover(1) is pulled over in the case of using the portable terminal on the hand as described in FIG. 2, and the cover holder(1c) is also pulled over with the cover(1) being pulled over in the
20 case of using it on the floor as described in FIG. 3 or FIG. 4.

A stylus pen for user's data inputting is inserted in a pen holder(10) formed at front side of the main body(B) under the placing room(2).

25 In addition, as described in FIG. 7, a USB port(9) is

formed at the side of the main body(B) under the
placing room(2) to perform battery charging of the
portable terminal and data transfer. External devices
such as a computer, a digital camera, or an external
5 hard-disk can also be connected to the terminal
through the USB port(9).

FIG. 2 is a side view illustrating an occasion of
using a portable terminal, which is placed in the case
according to the present invention, on the hand.

10 The cover(1) is bendably connected to a cover
holder(1c) by the first rotation shaft(1a), and the
cover holder(1c) is bendably connected to the back of
the main body(B) by the second rotation shaft(1b).

In other words, the second rotation shaft(1b) fixes
15 the cover holder(1c) to the back of the main body(B)
to be able to rotate around the shaft, and the first
rotation shaft(1a) fixes the cover(1) to the cover
holder(1c) to be able to rotate around the shaft.

In case of using the terminal on the hand as
20 described in FIG. 2, the cover(1) is pulled over
around the first rotation shaft(1a) so that the liquid
crystal screen of the terminal, which used to be
protected by the cover, is exposed.

The keyboard(4) is pulled back, with being folded,
25 around the horizontal hinge(4a) to be placed in a room

formed at the lower deck of the back side of the main body(B) and protected by the keyboard cover(5) therein, and the keyboard cover(5) is maintained to be locked by the keyboard cover lock(6).

5 The horizontal hinge(4a) connects the keyboard(4) to the main body(B) to place the keyboard(4) in a room formed at the lower deck of the back side of the main body(B).

FIG. 3 is a side view illustrating an occasion of using a portable terminal, which is placed in the case according to the present invention, on the floor.

The cover(1) is pulled over around the first rotation shaft(1a) and then the cover holder(1c) is pulled back around the second rotation shaft(1b) so that the main body(B) can be supported by the cover(1) and the cover holder(1c).

The keyboard(4) is pulled back, with being folded, around the horizontal hinge(4a) to be placed in a room formed at the lower deck of the back side of the case(A) and protected by the keyboard cover(5) therein.

FIG. 4 is a side view illustrating an occasion of using a portable terminal, which is placed in the case according to the present invention, on the floor with using the keyboard.

25 In this occasion, the cover(1) and the cover

holder(1c) are pulled back to support the case(A) in the same shape as described in FIG. 3, on the other hand, the keyboard(4), which is placed in a room formed at the lower deck of the back side of the main body(B) in FIG. 3, is pulled up front around the horizontal hinge(4a) to be placed on the floor by the keyboard cover lock(6) releasing the lock of the keyboard cover(5).

FIG. 5a is a top view of a case in accordance with the present invention for showing the state in which the keyboard is placed, with being folded, at the back of the main body.

As described in the figure, the keyboard(4) is pulled back around the horizontal hinge(4a) to be placed at the back of the main body(B) with being folded by an inside-empty hinge(11) as an axis.

The keyboard cover(5) rotates around a vertical hinge(5a) formed at a side of the main body(B), and it is locked or released by the keyboard cover lock(6) formed at the opposite side of the case(A).

By this structure, the keyboard(4) is protected by the keyboard cover(5) with being folded at the lower deck of the back side of the main body(B) and the keyboard cover(5) is maintained to be locked by the keyboard cover lock(6).

Grooves(7) are formed longitudinally at the back of the main body(B) at the locations of being contacted by the cover holder(1c) so that the cover holder(1c) is located therein to support the case(A).

5 Referring to FIG. 6, the keyboard(4) is electrically connected to be foldable and divided into several sectors by inside-empty hinges(11).

Each sectors of the keyboard(4) uses the same flexible circuit board(15), which is connected through
10 the inside-empty hinges(11), for mutual connection of the keys on the divided sectors.

In this embodiment of the present invention, the inside-empty hinges(11) longitudinally divide the keyboard(4) into 4 pieces.

15 The keyboard(4) adopts the same type of key array as that of the general standard keyboard to eliminate the inconvenience of using a mini-keyboard having been conventionally used for a portable terminal. In addition, the thickness can be reduced by using a
20 laminated circuit board (15).

In arranging the keys on the keyboard(4), by reducing the size of number keys and placing the function keys, which are frequently used in a terminal, to the left, it provides a better usability as well as an easy
25 portability.

FIG. 5b and 5c are a bottom view and a side view of the case in accordance with the present invention respectively. They show the state in which an extension package and the auxiliary battery are installed.

The extension packages(3) installed at both sides of the main body(B) are to supplement the functions of the conventional terminal by comprising an extended memory, a communication card, and slots for other auxiliary devices. And the auxiliary battery(3a), which provides an auxiliary power to the terminal, is installed next to the extension package at the back of the main board(B) to support the extension package(3).

In case of the extended memory, a currently selling CF-type memory or a recently developed micro-drive of more than 1 GB can be installed so that the data storage and/or upgrade are possible to satisfy the user's demand.

In addition, the communication card can be installed to obtain the necessary information regardless of time and location.

FIG. 7 is a front view of the case in accordance with the present invention with the keyboard cover being open.

As described in the figure, the keyboard cover(5) is

pulled over around the vertical hinge(5a) to the side of the main body(B) when the lock is released.

On the other hand, the cover(1) is still covering the spacing room(2) at the front of the case(A) so that
5 the liquid crystal screen of a terminal is protected in case of a portable terminal being placed in the placing room(2).

FIG. 8 is a conceptual view illustrating the overall circuit of the portable terminal case in accordance
10 with the present invention.

The circuit connected to the connection slot(8) at the bottom of the placing room(2) described in FIG. 1 is connected to the keyboard(4) to be connected to a keyboard controller(12) controlling the keyboard(4)
15 and connected to a circuit(13) for the extension package and the auxiliary battery through a circuit connection section(14) formed at a side of the placing room(2).

Furthermore, it can be connected to external devices
20 such as a computer, a digital camera, or an external hard-disk through a USB port(9) formed at the bottom of the main body(B) for carrying out the data transfer. And additionally, the battery of the terminal can be also charged through the USB port(9).

25

[Industrial Applicability]

As mentioned thereinbefore, a portable terminal in accordance with the present invention provides an easy
5 connection between a portable terminal and a keyboard and protects the liquid crystal screen of a portable terminal from the possible damage caused by an external impact.

In addition, it provides easier portability and a
10 better usability by eliminating the problems of inputting inconvenience, insufficient memory, and short using duration.

WHAT IS CLAIMED IS:

1. A portable terminal case comprising:

- 5 a main body of which a placing room for a portable terminal being inserted up-to-down to be placed therein is formed on the front upper side;
- a keyboard, as an input means of said portable terminal, equipped with numbers of keys, that can be divided into several foldable sectors by at least one or more inside-empty hinges;
- 10 a horizontal hinge, installed at the bottom of said main body, rotationably connecting said keyboard to the bottom of said main body to locate said keyboard at a room formed at the lower deck of the back side of said main body to be protected therein; and
- 15 a cover holder that is rotationably fixed at the back of said main body around a rotation shaft to support the back of said main body to be inclined to the floor.
- 20

2. A portable terminal case as claimed in claim 1, wherein said inside-empty hinges are longitudinally formed for said keyboard to be folded by 4 pieces.

25

3. A portable terminal case as claimed in claim 1,
wherein a cover is rotationably connected to said
cover holder by another rotation shaft to protect
said portable terminal placed in said placing room
5 at front by being rotated to the front side.

4. A portable terminal case as claimed in claim 1,
wherein grooves for cover holder, into which said
cover holder is inserted, are formed vertically
10 along with said cover holder at the back of said
main body at the locations of being contacted by
said cover holder.

5. A portable terminal case as claimed in claim 1,
15 wherein a stylus pen holder, into which a stylus pen
for user's data inputting is placed by being
partially inserted, is formed at the front side of
said main body.

20 6. A portable terminal case as claimed in claim 1,
wherein an extension package is installed at the
upper deck of the back side of said main body and
an auxiliary battery, that protects said extension
package and supplies an auxiliary power to said
25 portable terminal, is installed next to said

extension package at the back of said main body,
and data is being transferred between said
extension package and said portable terminal
through a connection slot, connected to the slot of
5 said portable terminal, formed on the front side of
said main body.

7. A portable terminal case as claimed in claim 6,
wherein a USB port, which is connected to external
10 devices such as a computer, a digital camera, or an
external hard-disk, is formed at a side of said
main body, and data is being transferred between
said external devices and said portable terminal as
well as the battery that supplies electric power to
15 said portable terminal is being charged through
said USB port.

8. A portable terminal case as claimed in claim 6,
wherein a circuit connected to said connection slot
20 is connected to said keyboard to be connected to a
keyboard controller controlling said keyboard and
connected to a circuit for said extension package
and said auxiliary battery through a circuit
connection section formed at a side of said placing
25 room.

9. A portable terminal case as claimed in claim 6,
wherein two extension packages are installed at both
sides of the back of said main body.

5

10. A portable terminal case as claimed in claim 1,
wherein said keyboard is protected by said keyboard
cover being rotated around a vertical hinge formed
at a side of said main body while being placed in
said placing room with being folded, and said
keyboard cover is locked or released by a keyboard
cover lock formed at the opposite side of said main
body.

10

15

1/8

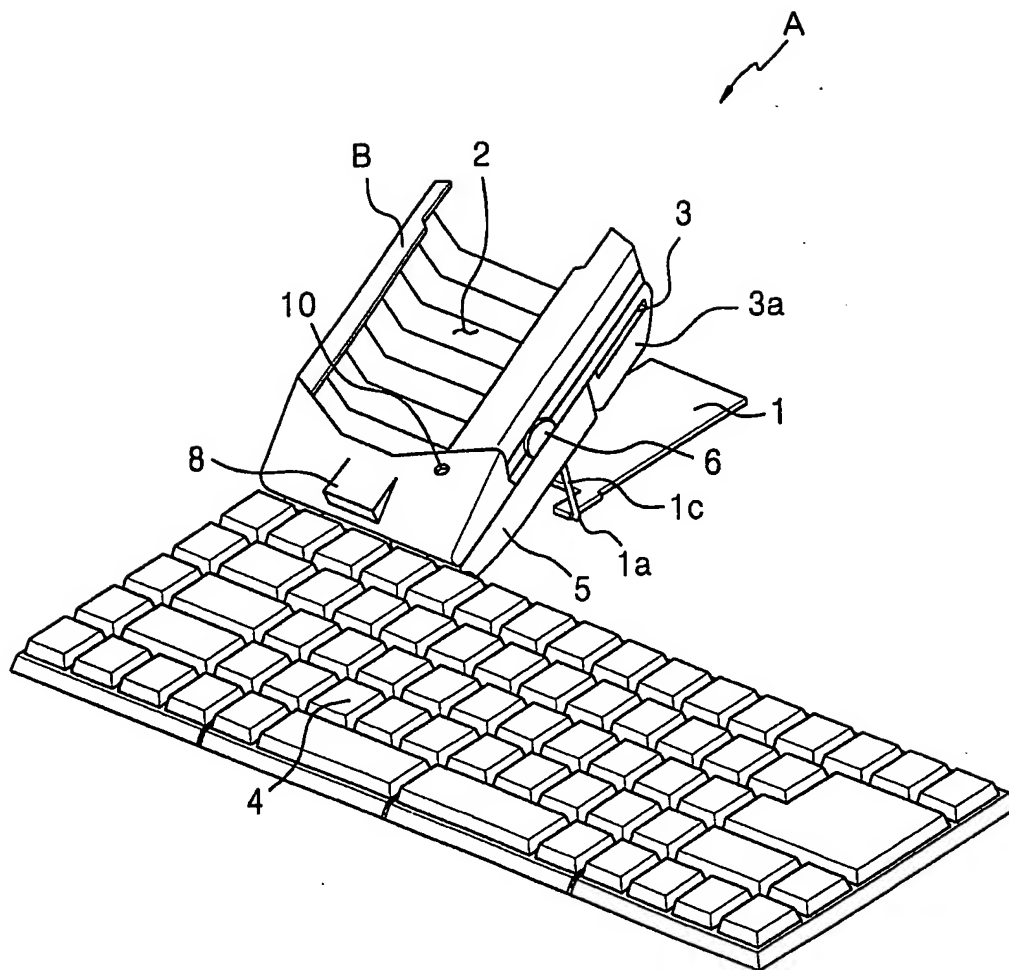


Fig. 1

2/8

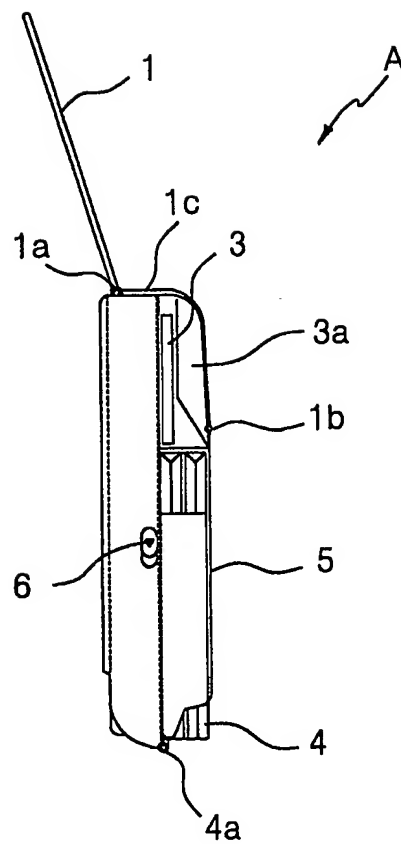


Fig. 2

3/8

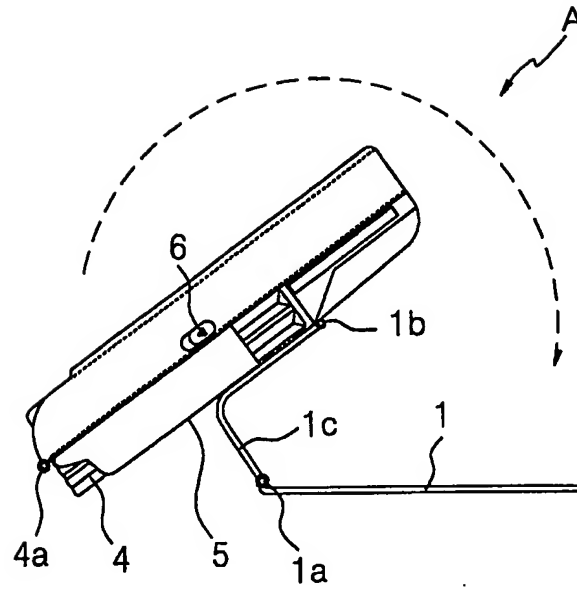


Fig. 3

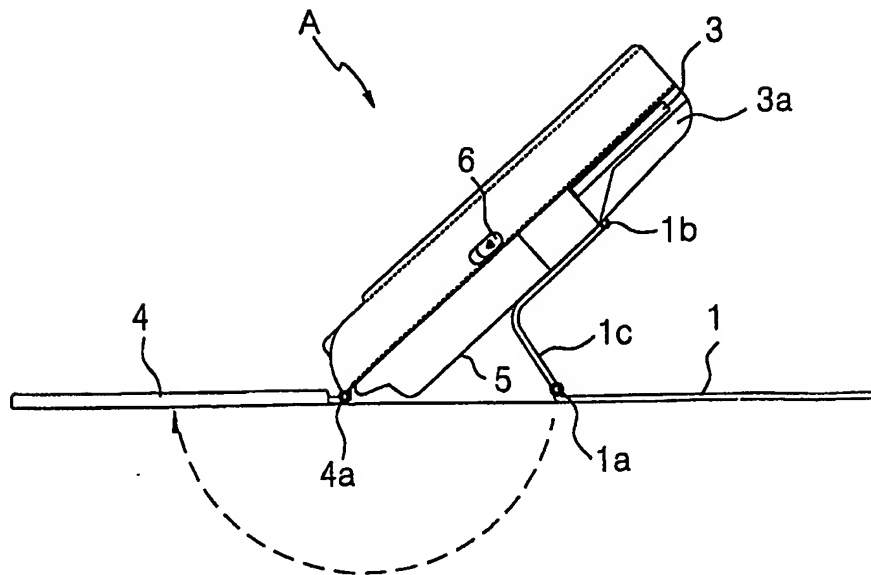


Fig. 4

4/8

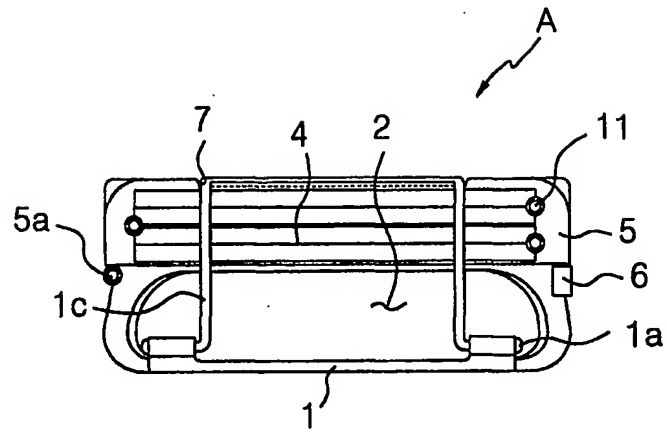


Fig. 5a

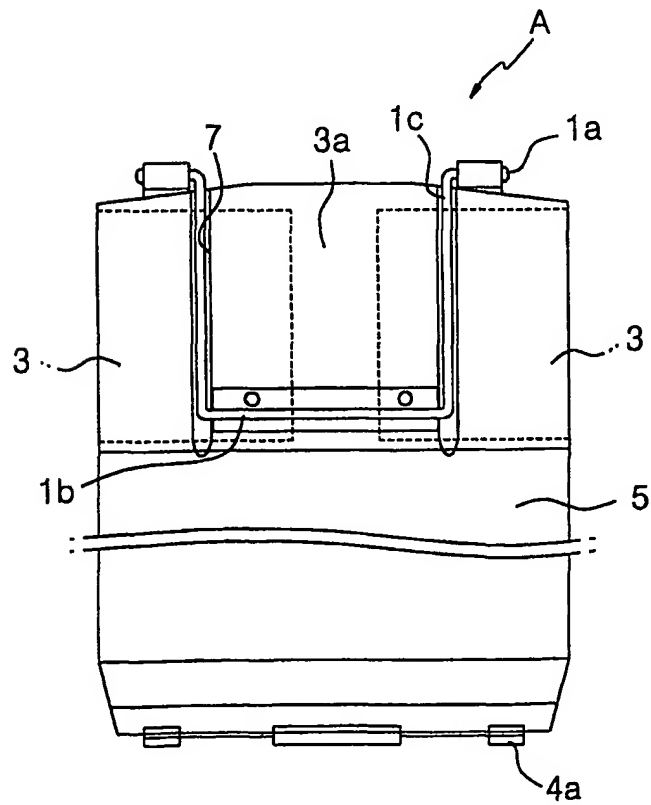


Fig. 5b

5/8

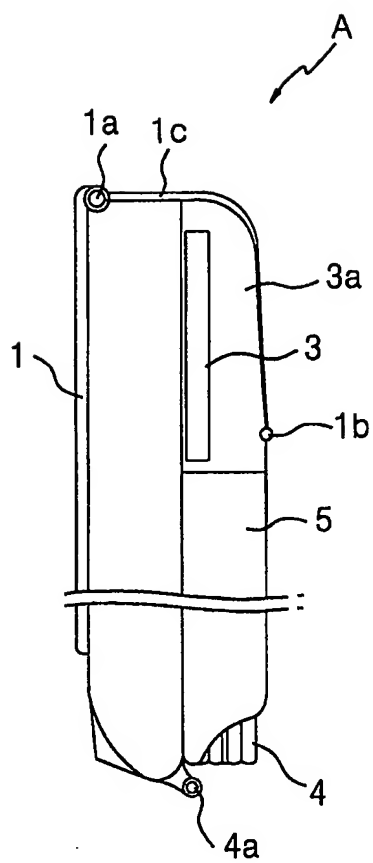


Fig. 5c

6/8

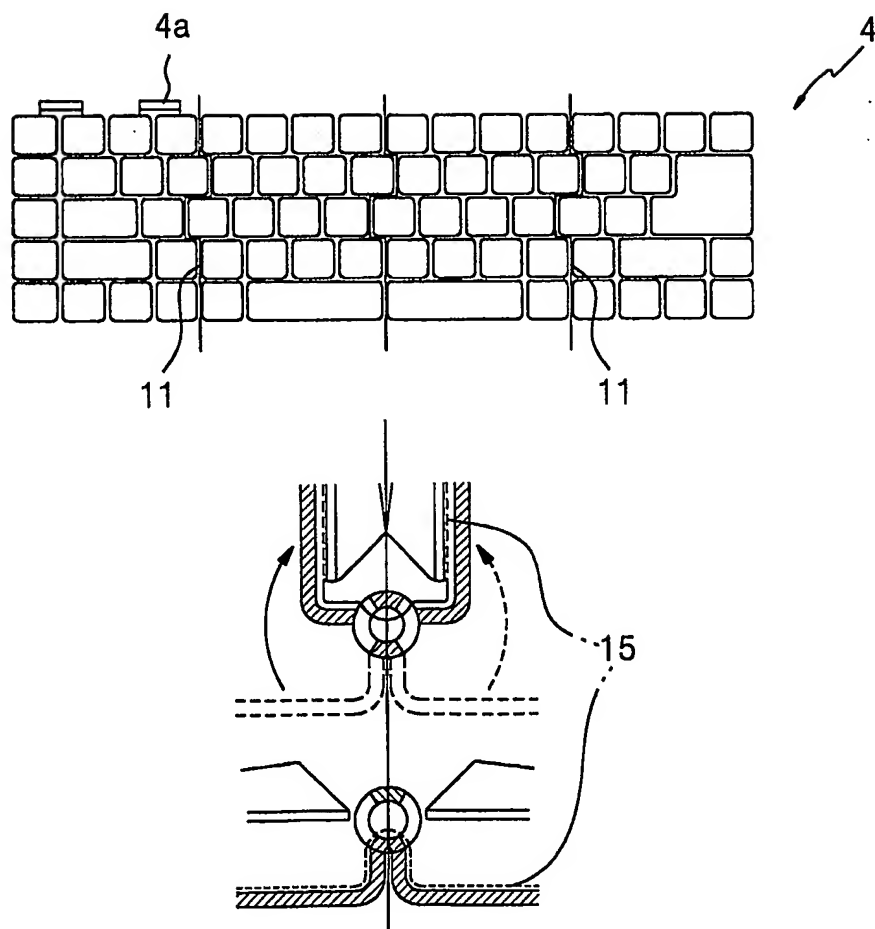


Fig. 6

7/8

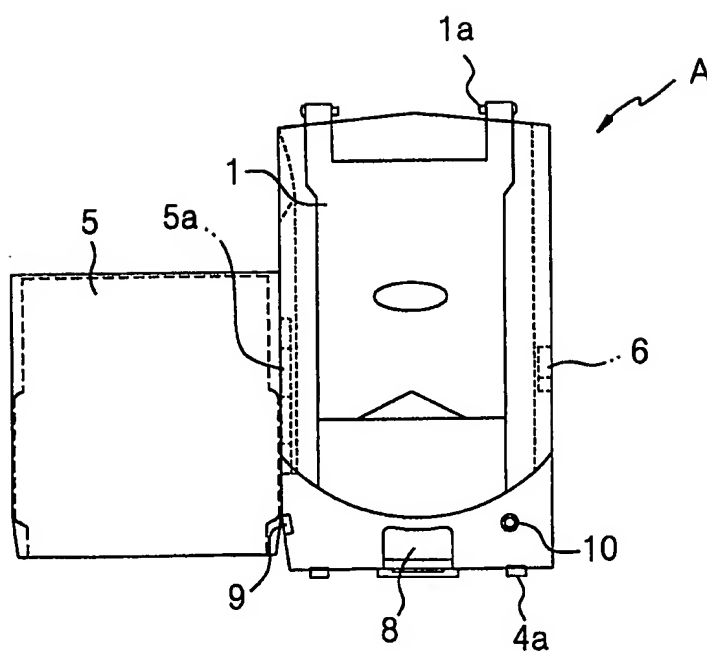


Fig. 7

8/8

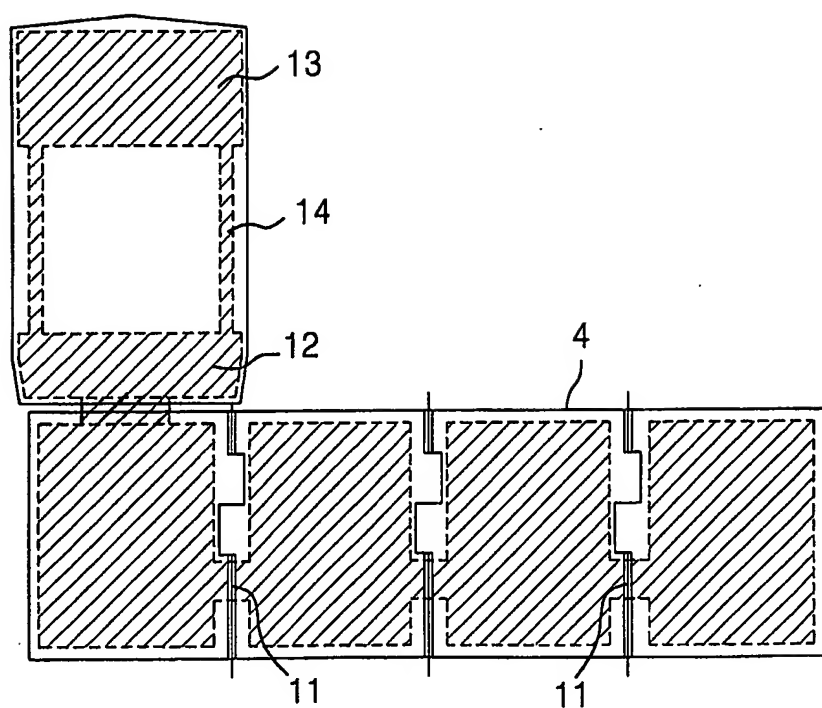


Fig. 8